

OPERATING SUMMARY

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ELORA

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MINISTRY OF THE
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Ontario

Ministry of the
Environment

135 St. Clair Avenue West

Toronto 195, Ontario

We are pleased to present you with the 1972 operating summary for the water pollution control plant serving your community.

This summary contains data on the performance of the plant as well as relevant financial information. Of particular interest is the review of the year's activities in which significant items of these data are discussed in some detail by the operations engineer and his staff who, by their day-to-day involvement with the operation, are thoroughly familiar with the plant.

We appreciate your continuing interest in protecting the environment through the efficient operation of this wastewater treatment facility.

D. S. Caverly,
Assistant Deputy Minister.

D. A. McTavish, P. Eng.,
Director,
Project Operations Branch.

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135 St. Clair Avenue West
Toronto 195

ELORA

WATER POLLUTION CONTROL PLANT

operated for

THE VILLAGE OF ELORA

by the

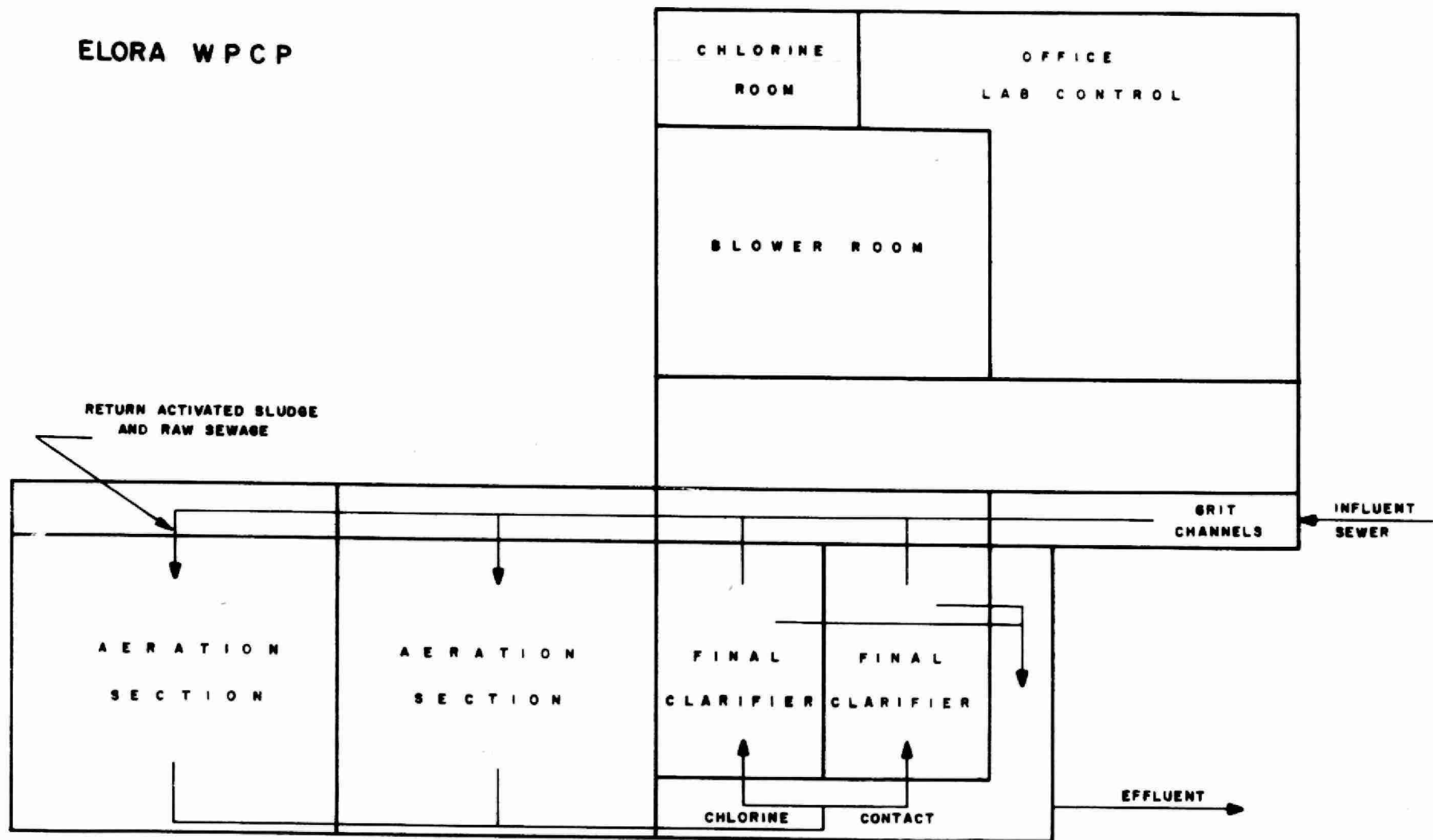
MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY

CONTENTS

Title Page	. . . . .	1
Flow Diagram	. . . . .	4
Design Data	. . . . .	5
'72 Review	. . . . .	6
Project Costs	. . . . .	8
Process Data	. . . . .	11

ELORA WPCP



DESIGN DATA

PROJECT NO. 2-0125-62

TREATMENT Extended Aeration

DESIGN FLOW 0.083 mgd

DESIGN POPULATION 1,000

BOD - Raw Sewage 210 mg/l

SS - Raw Sewage 250 mg/l

PRETREATMENT

Screening (at pumping station)

- Two coarse bar screens

Pumps - Robert Morse

- Two 300 gpm (electric) @ 47' tdh

Grit Removal

Type: Grit channels

Size: Two 10' x 2'

SECONDARY TREATMENT

Aeration Tanks

Type: Single-pass

Size: Two 32' x 20' x 11' (14,100 cu ft
or 87,800 gal)

Retention: 25.4 hr

Air Supply

Type: Sutorbilt; variable speed pulley

Size: Two 183-370 cfm each

Diffusers

Type: Spargers

Size: 16 per tank @ 2' centres

Secondary Sedimentation

Type: Walker Process

Size: Two 26' x 6' x 7'9" deep (7,500 gal)

Retention: 4.3 hr

Loading: Surface, 266 gal/ft²/day

Weir, 1,500 gal/ft/day

CHLORINATION

Type: Advance, Model 101

Chlorine Contact Chamber

Size: 13' x 5' x 6' deep (2,180 gal)

Retention: 37.7 min

OUTFALL

- 12" dia pipe to Grand River

SLUDGE HANDLING

Type: Thickening tank

Size: 27' x 20' 8" x 11' 9" (avg)
(6,750 cu ft or 42,000 gal)

'72 Review

GENERAL

The Elora Water Pollution Control Plant is a 0.083 mgd extended aeration activated sludge plant consisting of screening facilities, grit channel, aeration, final settling, chlorination and sludge holding facilities. There is a remote pumping station associated with this project.

During the year a consulting engineering firm was preparing a preliminary report on the expansion of the Elora Water Pollution Control Plant.

Both the Elora and Fergus Water Pollution Control Plants were operated by staff stationed at Fergus during the year. Under the supervision of head office engineers, the staff operated a clean, attractive and efficient plant for the Village of Elora.

EXPENDITURES

The total operating cost for the year was \$11,361.82 or \$193.90 per million gallons of sewage treated. The unit cost of removing one pound of BOD was 16.3 cents while 11.8 cents was the unit cost of removing one pound of suspended solids.

PLANT FLOWS AND CHLORINATION

The total raw sewage flow treated at the plant was estimated to be 46 million gallons, an increase of 6 million gallons from 1971. The measured total flow for the first seven month period, when meter was operative, was 32.9 million gallons for an average daily flow of 0.15 mgd. Because lower flows are normally expected in the fall, the average daily flow for the year was estimated to be 0.13 mgd, or 157 percent of design capacity.

An average chlorine dosage of 2.8 mg/l was required to maintain an average chlorine residual in the final effluent of 0.5 mg/l before discharging to the Grand River.

AERATION

The average MLSS concentration of 3700 mg/l and F/M ratio of 0.06 are within the limits of good extended aeration operation.

PLANT EFFICIENCY

The average BOD and suspended solids concentrations in the influent were 131 and 199 mg/l respectively. The average effluent BOD concentration of 15 mg/l was within the Ministry of the Environments objectives of 15 mg/l while the average suspended solids effluent concentration of 19 mg/l was slightly above the Ministry of the Environments objective of 15 mg/l. For both BOD and suspended solids the effluent values were a decrease from those of 1971. Removal efficiencies for BOD and suspended solids were 89 and 90 percent respectively.

The use of a polyelectrolyte to assist final clarification during the year proved to be a very good temporary solution to the hydraulic overloading of the plant.

CONCLUSIONS

With the aid of polyelectrolyte the Elora plant produced a very good effluent in 1972. Expansion of the plant in the future should ensure the continuation of a very good effluent.

PROJECT COSTS

NET CAPITAL COST	\$361,285.04
DEDUCT - Portion financed by CMHC (Final)	(122,424.66)
MUNICIPAL ADVANCES	<u>(41,231.20)</u>
Long Term Debt to MOE	<u>\$197,629.18</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1972	\$ <u>40,897.13</u>
Net Operating	\$ 11,361.82
Debt Retirement	2,137.00
Reserve	1,298.42
Interest Charged	<u>11,082.84</u>
TOTAL	\$ <u>25,880.08</u>

RESERVE ACCOUNT

Balance @ January 1, 1972	\$ 17,830.50
Deposited by Municipality	1,298.42
Interest Earned	<u>1,078.10</u>
	\$ 20,207.02
Less Expenditures	<u>3,529.25</u>
Balance @ December 31, 1972	\$ <u>16,677.77</u>

1972 COSTS

OPERATING COSTS

● PAYROLL	45 %
● FUEL	NIL %
● POWER	17 %
● CHEMICALS	14 %
● GENERAL SUPPLIES	3 %
● EQUIPMENT	1 %
● REPAIRS & MAINTENANCE	6 %
● SUNDRY	8 %
● WATER	NIL %
● TRAVEL	7 %

TOTAL ANNUAL COST

NET OPERATING	44 %
DEBT RETIREMENT	8 %
RESERVE	5 %
INTEREST	43 %

YEARLY OPERATING COSTS

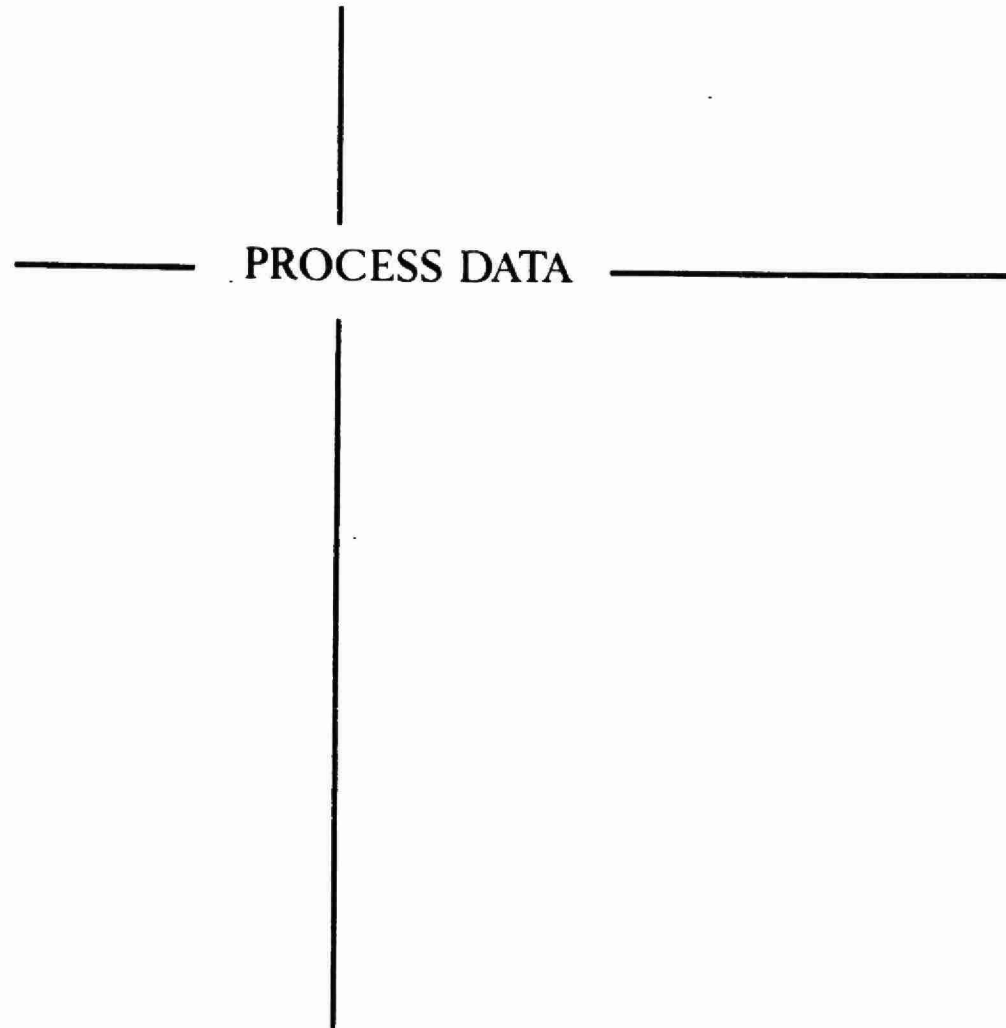
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	TREATMENT COSTS	
			\$ per million gal	£ per lb BOD
1968	29.29	7,647.34	261.09	19 cents
1969	24.8*	5,743.38	231.59	17 cents
1970	23.8	7,746.20	325.40	16 cents
1971	40.0*	11,822.37	295.60	17 cents
1972	58.6	11,361.82	194.00	16 cents

MONTHLY OPERATING COSTS

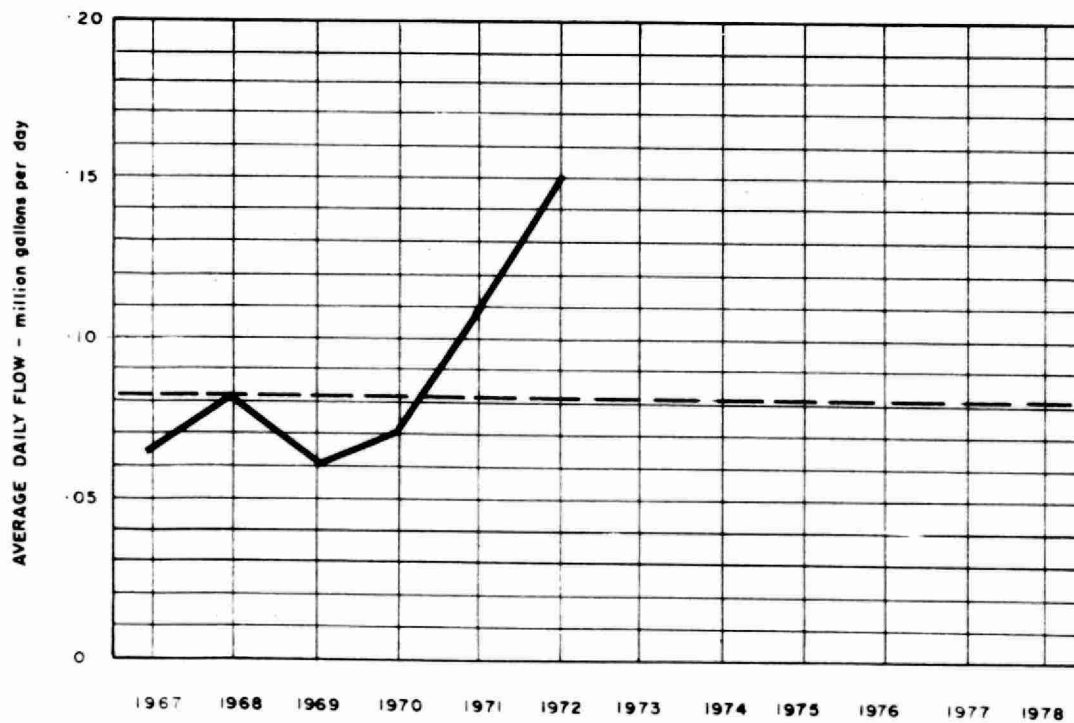
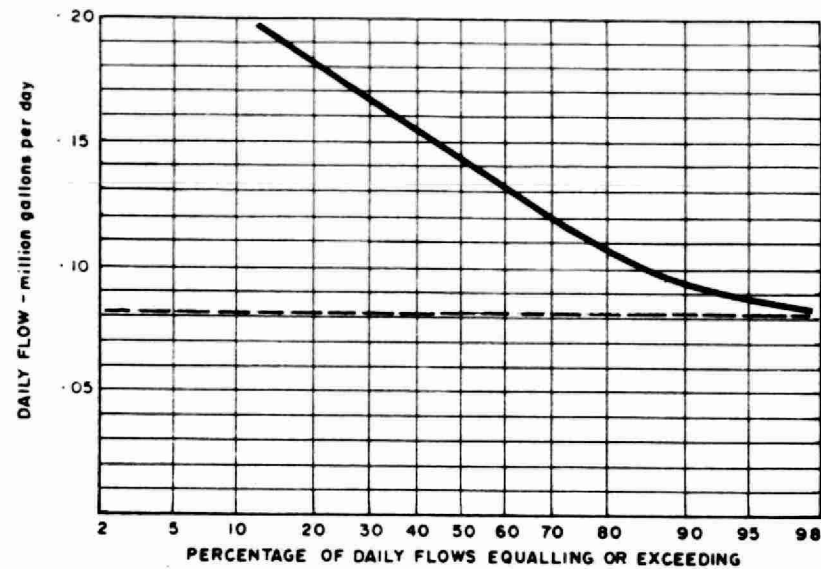
MONTH	TOTAL EXPENDITURE	REGULAR PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY*	WATER	TRAVEL
JAN	195.00				195.00							
FEB	450.56				172.50		9.85		70.31	133.10		64.80
MAR	1062.31	646.99			183.75		141.72		2.50	23.90		63.45
APR	333.32				209.00		29.61			29.91		64.80
MAY	1444.68				176.25	1107.39	19.42		66.87	7.55		67.20
JUNE	766.85				146.25		16.22		21.00	519.78		63.60
JULY	346.78				153.75		10.40	85.86		29.87		66.90
AUG	181.12				125.00		37.78			(2.06)		20.40
SEPT	451.62				133.00		33.24	28.00	148.83	14.95		93.60
OCT	338.45				141.00	177.00	5.50			14.95		
NOV												
DEC	5791.13	4311.59	18.86		310.00	276.85	68.92		355.60	165.83		283.48
TOTAL	11361.82	4958.58	18.86		1945.50	1561.24	372.66	113.86	665.11	937.78		788.23

Brackets indicate credit.

* Sundry includes sludge haulage costs of \$302.00



FLOWS

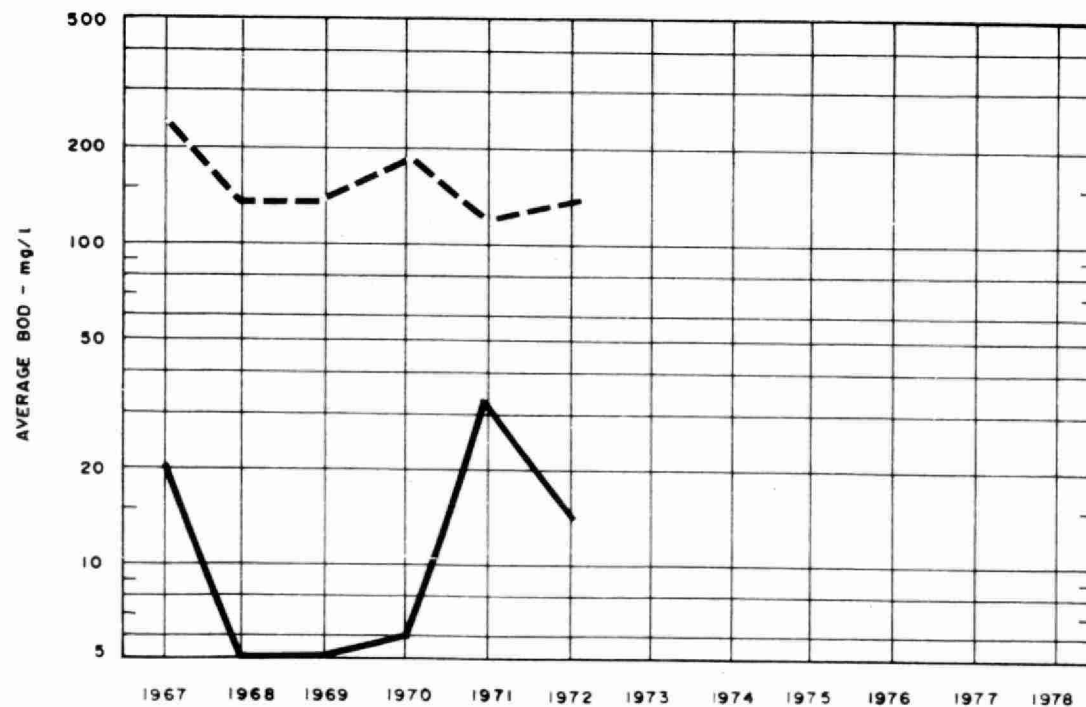
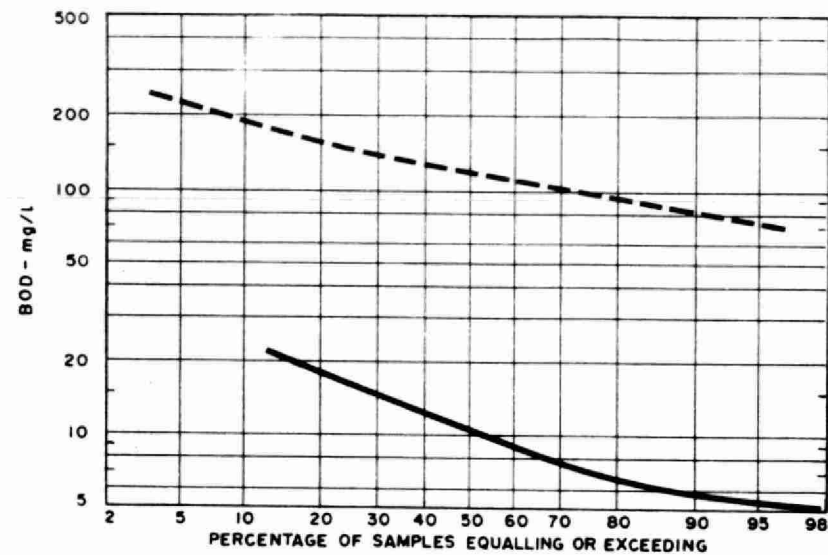


PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l P	EFFLUENT mg/l P
						%	10 ³ pounds			%	10 ³ pounds		
JAN	3.2	.11	.17	140	8	94	4.3	208	14	94	6.3	19.4	5.0
FEB	3.2	.11	.14	150	12	92	4.4	282	22	92	8.3	12.0	7.0
MAR	4.5	.15	.20	120	9	93	5.0	236	20	92	9.7	13.1	4.8
APR	7.5	.25	.34	61	9	85	3.9	122	15	88	8.0	4.9	2.1
MAY	5.4	.18	.29	152	18	91	7.5	166	15	91	8.1	14.3	6.1
JUNE	4.6	.15	.19	130	19	85	5.1	162	20	88	6.5	5.7	7.0
JULY	4.6	.15	.19	120	16	87	4.8	157	16	90	6.5	8.7	5.0
AUG	4.5 *	.15	.18	240	10	96	10.4	207	24	89	8.3	12.0	6.5
SEPT				130	11	92		213	20	91		9.5	5.6
OCT				135	18	87		204	20	90		11.0	6.5
NOV				155	28	82		224	24	89		12.8	6.9
DEC				93	22	76		200	25	88		12.3	6.5
TOTAL		-	-	-	-	-		-	-	-		-	-
AVG.		.15	MAXIMUM .34	131	15	89	5.7	199	19	90	7.7	11.5	5.7
No. of Samples	-	-	-	22	22	-	-	71	242	-	-	22	21

* Portion of flow estimated. Meter of of service August 7 to December 31

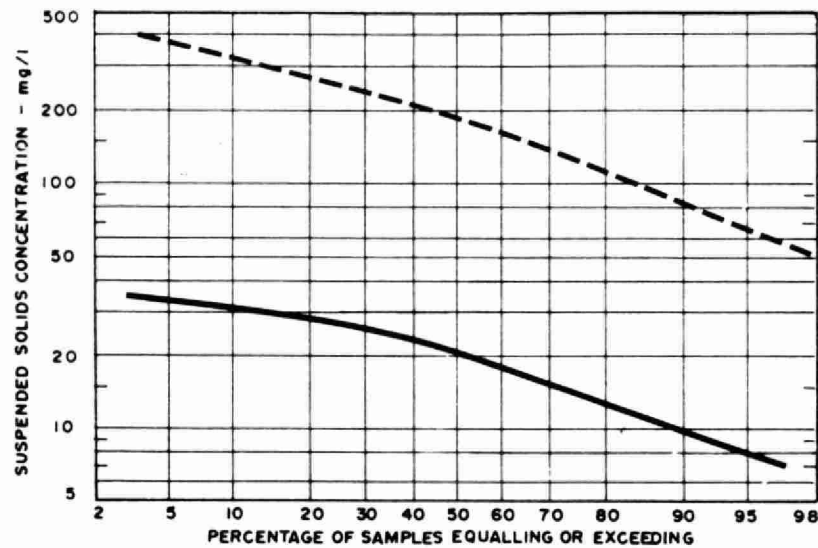
BIOCHEMICAL OXYGEN DEMAND



PLANT INFLUENT - - - - -

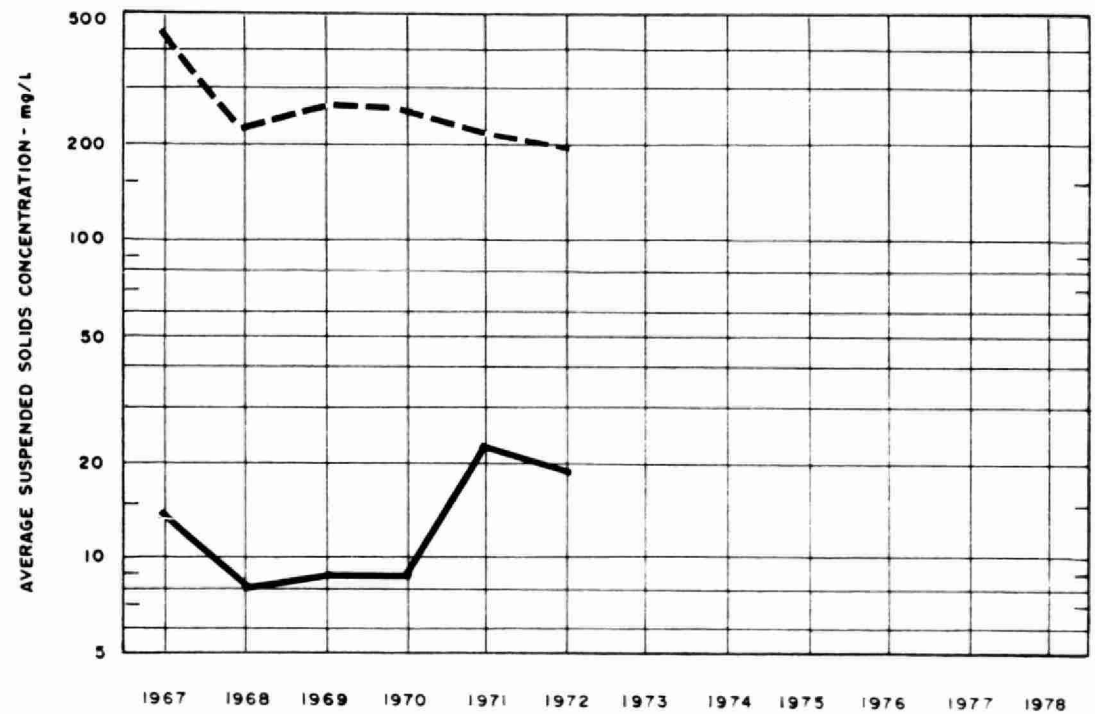
PLANT EFFLUENT —————

SUSPENDED SOLIDS

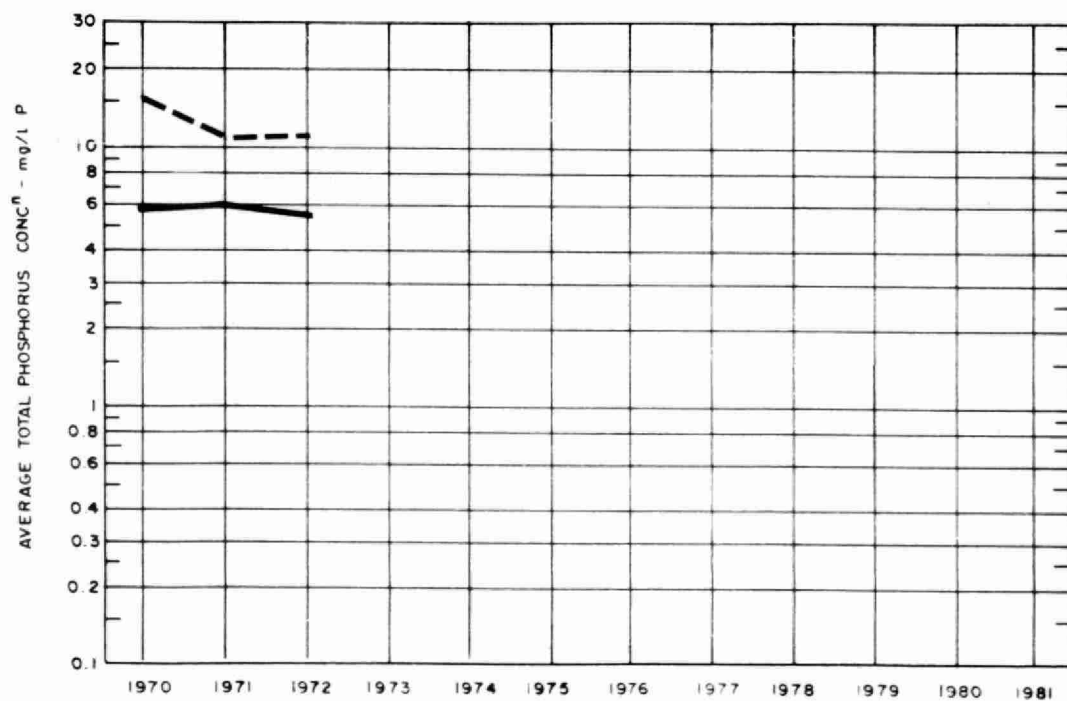
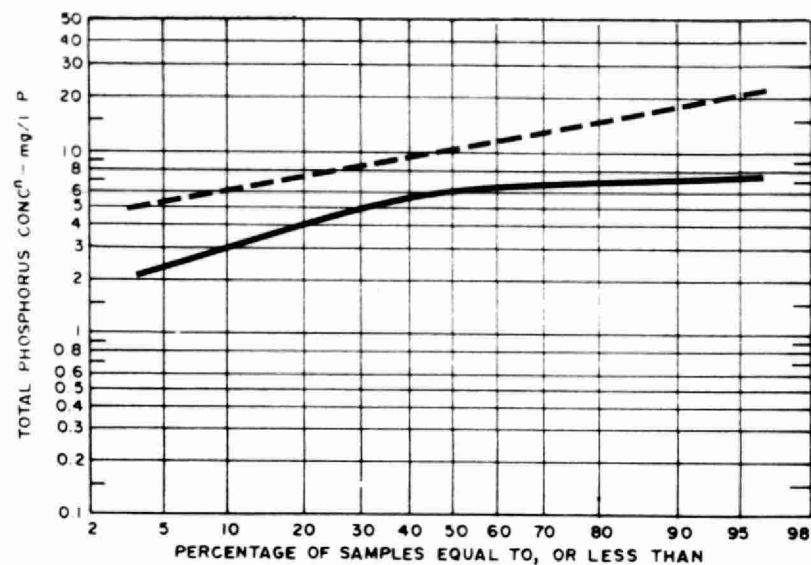


PLANT INFLUENT - - - - -

PLANT EFFLUENT —————



PHOSPHORUS



PLANT INFLUENT - - - - -

PLANT EFFLUENT —————

TREATMENT DATA

MONTH	GRIT	CHLORINATION		AERATION			WASTE SLUDGE			AEROBIC DIGESTER			
	QUANTITY REMOVED cubic feet	CL ₂ USED 10 ³ pounds	AVG. DOSAGE mg/l	MLSS CONC mg/l	F/M day ⁻¹	AIR USED 1000 ft ³ lb BOD	QUANTITY 10 gallons	SUSPENDED SOLIDS mg/l	VOL. SOLIDS %	QUANTITY REMOVED 10 gallons	SUSPENDED SOLIDS mg/l	VOL. SOLIDS %	AMOUNT HAULED cubic yards
JAN		120	3.7	3150	.06	2.1		5670	64				
FEB		105	3.3	2870	.06	2.0		5640	60				
MAR	4	133	3.0	3220	.06	1.8		6100	61				
APR	11.5	126	1.5	3520	.05	2.3		9430					
MAY		114	2.1	4380	.07	1.2		9440	67				
JUNE	4	145	3.2	4440	.05	1.8		9430	70				
JULY	4	126	2.8	3320	.06	1.9		6770	69				
AUG	9	116	2.5	3960	.10	.9		7290	71				
SEPT	7	109		3670				6980	66				
OCT		114		4140				7940	68				
NOV	4.5	103		3700				8200	69				
DEC	3	99		4090		94		9400	72				
TOTAL	47.0	1410	-	-	-	-		-	-		-	-	
AVG.	cu ft/mil gal	117	3.7	3700	.06	1.8		7690	67				

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